mother, seated, with a sick child on her lap, the drawn lines on her face betraying her great anxiety. The man who pushed back death is the theme developed by Paul Albert Laurens. His design represents an angel thrusting back the scythe swung by the skeleton figure draped in white, which has been for centuries the incarnate conception of death. Poulbot designed a vignette which represented a young boy bitten by a mad dog, thus recalling the discovery of the antirabic vaccine. Abel Faivre was content to perpetrate a pun. The scientist is represented with a halo about his head, while beneath are inscribed the words: *Le bon Pasteur* (the Good Shepherd).

CANON WILLIAM WEEKES FOWLER, vicar of Earley, Reading, England, known for his work on the Coleoptera, died on June 3, at the age of seventy-four years.

M. K. LOWEGREN, the first professor of ophthalmology in Sweden, has died at the age of eighty-seven years.

PROFESSOR HEINRICH BORUTTAU, director of the Friedrichshain Hospital, Berlin, known for his work in physiological chemistry, and on the problems of nutrition, died on May 15, aged fifty-four years.

DR. HANS GOLDSCHMIDT, inventor of the Goldschmidt thermite process, died at Baden-Baden on May 21, aged sixty-two years.

THE French Association for the Advancement of Science holds its meeting this year at Bordeaux from July 30 to August 4.

THE New York State Horticultural Society, with a membership of several hundred prominent fruit growers scattered throughout western New York and the Hudson River Valley, will hold its summer meeting on the grounds of the New York Agricultural Experiment Station at Geneva on August 1.

UNIVERSITY AND EDUCATIONAL NOTES

GOVERNOR SMALL has signed the bill appropriating the sum of $400,000 to establish a medical research laboratory at the University of Illinois.

AT the annual commencement exercises of the Northwestern University on June 18, it was announced that $100,000 had been received under the will of Mrs. G. F. Swift, and a like amount from Elbert H. Gary, John C. Shaffer and "A Friend."

A TRAVELING fellowship in medicine has been established at the Cornell University Medical College for 1923–1924 amounting to $2,000. It is available for men and women who have graduated from Cornell within ten years or who are graduates of other medical colleges within ten years who are now attached to the instructing staff of this college. This fellowship has been awarded to Harold Edwin Himwich, who obtained the degree of B.S. from the College of the City of New York in 1915 and the M.D. degree from Cornell University in 1919.

CHARLES W. PUGSLEY, assistant secretary of agriculture, has submitted his resignation, effective on October 1, to accept the presidency of the South Dakota State College of Agriculture and Mechanical Arts at Brookings.

AT their meeting on June 18, the trustees of Cornell University appointed Dr. Robert M. Ogden, professor of education, dean of the College of Arts and Sciences to fill the vacancy which has existed since the resignation of Professor Frank Thilly, professor of philosophy.

RICHARD E. SCAMMON, Ph.D., has been appointed acting director of the department of anatomy of the University of Minnesota during the year's absence of Dr. Clarence M. Jackson, who will serve as chairman of the medical division of the National Research Council during the coming year.

DR. BOWMAN C. CROWELL, of Charleston, S. C., has been appointed professor of pathology in the Jefferson Medical College of Philadelphia, to succeed Dr. William M. L. Coplin, who has resigned.

DR. H. H. WILLARD has been appointed full professor of analytical chemistry in the University of Michigan.

MR. E. C. WILLIAMS has been appointed to the Ramsay Memorial chair of chemical engineering at University College, London. He has been research chemist to the joint research committee of the University of Leeds and the National Benzol Association.

DISCUSSION AND CORRESPONDENCE

PHOTOGRAPHIC PLATES FOR THE EXTREME ULTRA-VIOLET

IN recent years there have been a number of attempts to improve the photographic methods, perfected by Schumann, used in the investigation of the ultra-violet, so far without any very striking results.

Recently Mr. David Mann and I have been making some experiments with the daguerreotype process. The results, though interesting, are so far of no great practical value. It is not difficult to prepare a surface which will be very sensitive in the region about

wavelength 1850 AU, and on two or three occasions we have obtained records extending to wavelength 584 AU, but in general the behavior of the plates in the extreme ultra-violet is capricious and unsatisfactory.

Duclaux and Jeantet (*Journal de Physique*, II, 1921, p. 154) have described a way of "Schumannising" an ordinary dry plate by treating it with sulphuric acid, and recently Aston has referred to the same process. M. Duclaux has been so kind as to send me some specimens of the results he has obtained. He informs me, however, that he prefers another method which he and his colleague have discovered and which was described in their article just cited. His experiments were confined to the region of the spectrum which may be investigated with a quartz prism spectrograph; I have continued them into the extreme ultra-violet.

The procedure is extremely simple. A fast commercial photographic plate—I have employed a "Seed 30"—is coated with a thin film of a colorless paraffin oil; it is then exposed in the usual way in a vacuum spectroscope, the oil is removed with acetone and the plate is developed. The results are nearly, though not quite, as good as those which I have obtained with the most sensitive Schumann plates prepared according to the old method; it is quite easy to get a record of the strong helium line at 584 AU.

The success of the process evidently depends on fluorescent action; I have tried a number of different kinds of oil and I find that "Nujol," a very pure oil sold in this country for medical purposes, yields good results.

I feel sure that this discovery of Duclaux and Jeantet will prove a real blessing to all spectroscopists who work in the extreme ultra-violet.

THEODORE LYMAN

JEFFERSON LABORATORY,
HARVARD UNIVERSITY,
JUNE 28, 1923

THE PHYSICO-CHEMICAL BASIS OF PSYCHIC PHENOMENA

TO THE EDITOR OF SCIENCE: A paper entitled "Physico-chemical basis of psychic phenomena," by Hughes and King, in SCIENCE, May 18, 1923, touches on a problem of the most fundamental importance. For the sake of those who have been unable to follow the literature of nerve physiology I believe that certain comments on this paper are appropriate. The article in question begins with the sentence, "Ever since Galvani discovered the relation between an electric current and muscular action, there has been a feeling among scientists that the nerves are electrical conductors and that nerve impulses are really electrical currents." To a physiologist acquainted with the work of Bernstein,[1] Brünings,[2] Gotch,[3] Lucas,[4] Adrian[5] and Lillie[6] this sentence makes somewhat the same impression that would be conveyed to a physicist by such a statement as this, "Ever since the days of Franklin there has been a feeling among scientists that electricity is the cause of magnetism."

Since the work of DuBois-Reymond and Bernstein the intimate and fundamental relation between the nerve impulse and the electrical disturbance which marks its progress has been known, although not as yet fully understood, much as the intimate relation between electricity and magnetism has been known since the days of Oersted and Faraday. On the other hand the last possibility of explaining the nerve impulse as an electric current along the fiber in the same manner as it is conducted along a metal wire was definitely swept away by the research of Adrian in 1912[5] in which he showed conclusively that the energy of the nerve impulse comes not from the stimulus, but from the nerve fiber itself, thus proving that the nerve impulse belongs to an altogether different class of disturbance from the current in a wire. This fundamental experiment of Adrian's in a somewhat simplified and modified form is now performed as a class exercise by medical students in more than one university in this country. In 1914 Adrian,[5] by a wholly different line of experiment, established the all-or-nothing law for the nerve impulse, not in the sense frequently ascribed to this law, that the impulse is of immutable magnitude under all conditions, but in the sense that it is independent of the strength of stimulus, provided this be adequate, depending only on the condition of the tissue at the moment. These researches were in a sense the culmination of work inaugurated by Gotch and Lucas which had already created strong presumptive evidence pointing towards the conclusion at which Adrian finally arrived. More recent work by Olmsted and Warner[7] has reinforced and extended these conclusions.

The precise nature of the nerve impulse is still unknown, but those properties just mentioned are well established. The principles which have emerged from these researches should not be confounded with speculative hypothesis; they are clearly established facts.

[1] "Untersuchungen über d. Erregungsvorgang im Nerven- und Muskelsysteme. Heidelberg," 1871.

[2] *Arch. f. d. ges Physiol.*, 1903, xcviii, 241.

[3] *Journ. Physiol.*, 1902, xxviii, 395.

[4] *Proc. Roy. Soc., B*, 1912, lxxxv, 495; "The Conduction of the Nervous Impulse," London, 1917.

[5] *Journ. Physiol.*, 1912, xlv, 389; 1914, xlvii, 460; 1920, liv, 1; 1921, lv, 193.

[6] *Physiol. Reviews*, 1922, ii, 1.

[7] *Am. Journ. Physiol.*, 1922, lxi, 228.